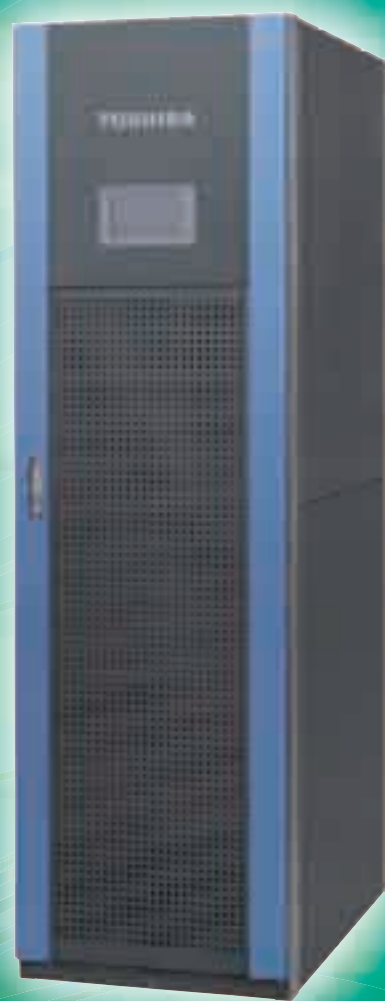


TOSHIBA

Leading Innovation >>>

GT-Series

UHF TV Transmitter





GT-Series UHF TV Transmitter



Since starting the production of analog television transmitters in 1952, Toshiba has provided high-quality and high-reliability in transmission networks all over the world for 60 years. The technology of Toshiba has taken the lead in the broadcasting industry in making a through shift to the digital broadcasting. Toshiba is now unveiling the brand-new GT-Series UHF digital TV transmitters that offer high-quality, high-performance, high-reliability, and superior cost-performance to customers worldwide.

The GT-Series UHF solid-state digital transmitter has been designed for multi digital TV standards (DVB-T2, DVB-T/H, ISDB-T/Tb, ATSC, ATSC-M/H, DTMB and CMMB). By adopting a leading-edge LDMOS technology and a new downsizing feature, GT-Series has achieved up to 25% reduction in footprint, more than 5 points of improved efficiency, and up to 200% increase in power output by a rack, compared to the existing devices.

GT-Series has three models of product lineups; High-power model (Liquid-cooled)/Medium-power model (Air-cooled)/Low-power model (Air-cooled), depending on system requirements. The High-power model achieves up to 9.9kW(before bandpass filter) power output by one rack, and can output higher power by combining two or more racks.

Units in GT-Series are designed in EIA rack-mount size. Especially, in Air-cooled models, the installation process is very simple because all the components can be mounted in a general-purpose EIA rack.

Features

High efficiency

- Leading-edge LDMOS in Power Amplifier (PA) device
- At least 23% high efficiency (DVB-T2, DVB-T/H, ISDB-T/Tb)

High power with very small footprint

- One of the most compact footprints in the same power output model in the industry
 - High-power (up to 9.9kW) : W 570 x D 1000 x H 1950 mm
 - Medium-power (up to 3.1kW) : W 570 x D 800 x H 1950 mm
 - Low-power (up to 780W) : W 570 x D 800 x H 816 mm
- EIA rack-mount sized unit / sub-chassis
- Downsized and lightened liquid-cooled PA by adopting new-structure cold plate

Flexible system configuration

- Multi digital broadcasting standards; DVB-T2, DVB-T/H, ISDB-T/Tb, ATSC, ATSC-M/H, DTMB/CMMB
- UHF full band from 470 MHz to 862 MHz
- Low-cost and scalable system architecture
- 3 FET blocks and 3 PS blocks mounted in one PA plate
- EX-exchange, power distribution and TX-Monitor functions in one Control Unit (CU)
- Higher power output system available by adding racks
- Various systems such as hot standby, dual-TX, N+1* systems
*will be released in future
- Various options; adaptive compensation, touch panel, etc.

Easy maintenance

- Easily removable PA plate
- Hot-swappable & Plug-in PA plate with built-in power supply
- Exchangeable FET block and PS block
- Downsized liquid-cooling system and reduced exchange cost of coolant by closed-circuit
- Pump replacement available during operation by using dual cooling pump

Easy operation

- Easy operation by CU
- Monitoring / Control available by external PC (Option) connected to Ethernet or touch-screen (Option)
- Network management interface via SNMP
- MER/IM monitoring available
(in case of adaptive compensation option)

Easy installation

- High/Medium-power model : 3-phase AC400V $\pm 15\%$ and 3-phase AC200V $\pm 15\%$ without AVR
- Low-power model: single phase AC200V 15% without AVR
- Easy access to each interface
- Air-cooled transmitter installable to general-purpose EIA rack

Reliability

- Automatic restart within 5 seconds after recovery from blackout
- Normal operation with VSWR up to 1.3
- Independent drain connectors for PA plate
- Built-in GPS receiver for SFN (Option)

About TOSHIBA

Corporate Information

Toshiba, a world leader in high technology, is a diversified manufacturer and marketer of advanced electronic and electrical products, spanning information & communications equipment and systems, Internet-based solutions and services, electronic components and materials, power systems, industrial and social infrastructure systems, and household appliances.

Since the start of production of television transmitters in 1952, Toshiba Corporation has been consistent in reliable design, development and production philosophy of easier installation, adjustments, operation and maintenance for the benefit of our customers worldwide.

Toshiba started the delivery of the UHF digital terrestrial TV transmitters on the ISDB-T standard to Japanese domestic broadcasters in 2000. Currently, several hundreds sets of Toshiba DTV transmitters and several thousands sets of Toshiba DTV transposers are used in Japan.

The 3700/7000/8000-series UHF digital transmitters have been shipped more than 900 sets to the broadcasters outside Japan.

Headquarters

Contact us for further information on our products.

1-1, Shibaura 1-chome, Minato-ku, Tokyo 105-8001, Japan

Tel: +81-3-3457-3244

Fax: +81-3-5444-9417

Email: gtx@po.toshiba.co.jp



Plants

Fuchu Complex

Toshiba Fuchu complex is the largest factory of Toshiba Corporation, located in the western suburb of Tokyo metropolis.

The products of Toshiba Fuchu Complex include electric power plants, transportation systems, large scale computer servers, telecommunications systems and elevating machines.

Toshiba's transmitters for professional broadcasting have been supplied from this Toshiba Fuchu Complex to the customers worldwide.



TOSHIBA Fuchu Complex

Dalian Toshiba Broadcasting Systems Co., Ltd. (DTBS)

DTBS was established in November, 2002 as a Chinese branch operation of Toshiba Fuchu Complex to support the TV transmitter manufacturing for the international market. Sharing the same concept of manufacturing and engineering philosophy with Toshiba Fuchu, DTBS can provide the same quality and performance as Toshiba Fuchu Complex. DTBS currently supplies PAs with high-efficiency/high-reliability to Japan. DTBS has been expanding its volume of manufacturing and supply of TV transmitters to Asia, Latin America and African regions.

GT-Series
UHF TV transmitter

Specifications

Common data for GT-Series

Model	High-power(Liquid-cooled)	Medium-power(Air-cooled)	Low-power(Air-cooled)
Frequency range	470 MHz to 862 MHz(UHF)		
Power output (after bandpass filter)	1kW to 9kW	1kW to 3kW	100W to 500W
AC line voltage (Contact us for details)	3 phase 4 wires, 400 V $\pm 15\%$ 3 phase 3 or 4 wires, 200 V $\pm 15\%$		200 V $\pm 15\%$
Line frequency	50/60Hz $\pm 5\%$		
Max. installation altitude	2500m above sea level		
Indoor temperature range	0 °C to +45 °C		
Outdoor temperature range	-10 °C to +45 °C or -30 °C to +40 °C		
Permissible relative humidity	95%, without condensation		
RF load impedance	50 Ω with VSWR ≤ 1.3		
Power output stability	± 0.3 dB or better		
Frequency stability	Within ± 100 Hz Internal ref		
Spurious	Less than -60dBc/20mw		

Specifications of each standards

Standard	DVB-T/H/T2	ISDB-T/Tb	ATSC,ATSC-M/H	DTMB	CMMB
Input	2 x ASI	2 x ASI	2 x SMPTE310(op. 2 x ASI)	2 x ASI	2 x ASI
Channel bandwidth	8 MHz	6 , 7 or 8 MHz	6 MHz	8 MHz	8 MHz
Shoulder level	< -37dB	< -37dB(op.< -43dB)	—	< -37dB	< -37dB
Signal to noise ratio	—	—	> 27dB	—	—

High-power (Liquid-cooled) Model (x : 1 = Single Exciter , 2 = Dual Exciter , 3 = Dual TX)

Output power	GTU02xL (1kW)	GTU04xL (2kW)	GTU06xL (3kW)	GTU12xL (6kW)	GTU18xL (9kW)
Power before bandpass filter	1.2 kW	2.3 kW	3.5 kW	6.6 kW	9.9 kW
Power after bandpass filter	1.0 kW	2.0 kW	3.3 kW	6.3 kW	9.4 kW
Number of PA plates	2	4	6	12	18
Dimensions (WxDxH)	570 x 1000 x 1950 mm				

Medium-power (Air-Cooled) Model (x : 1 = Single Exciter , 2 = Dual Exciter , 3 = Dual TX)

Output power	GTU03xF (1kW)	GTU06xF (2kW)	GTU09xF (3kW)
Power before bandpass filter	1.1 kW	2.1 kW	3.1 kW
Power after bandpass filter	1.0 kW	2.0 kW	3.0 kW
Number of PA plates	3	6	9
Dimensions (WxDxH)	570 x 800 x 1950 mm		

Low-power (Air-Cooled) Model

Output power	100W	200W	300W	500W
Power before bandpass filter	140W	270W	410W	780W
Power after bandpass filter	120W	230W	340W	650W
Number of PA plates	1	1	1	2
Number of FET blocks	1	2	3	6
Dimensions (WxDxH)	570 x 800 x 816 mm			

Please contact us for higher power requirement .

System Block Diagram

High-power (Liquid-cooled) model

- 3 sub-chassis installable in one rack
- 6 PA plates installable in one sub-chassis
- 3 FET blocks (FETx2) installable in one PA plate
- Up to 9.9kW output power (before bandpass filter)
- TX-control, EX-exchange, TX-monitor and 3way-distribution functions in one CU
- Remote control / monitoring available via SNMP

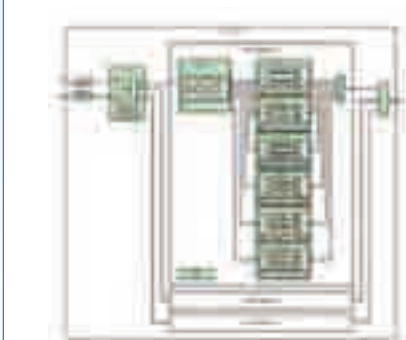
Medium-power (Air-cooled) model

- 3 sub-chassis installable in one rack
- 3 PA plates installable in one sub-chassis
- 3 FET blocks (FETx2) installable in one PA plate
- Up to 3.1kW output power (before bandpass filter)

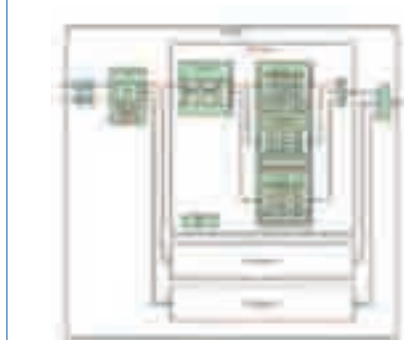
Low-power (Air-cooled) model

- 2 PA plates / 1PA plate in one sub-chassis
- Max. 3 FET blocks (FETx2) installable in one PA plate
- 140-780W output power (before bandpass filter)

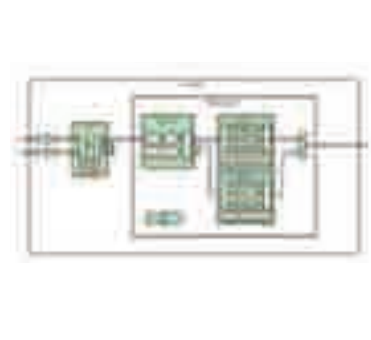
9 kW High-power model



3 kW Medium-power model



500W Low-power model

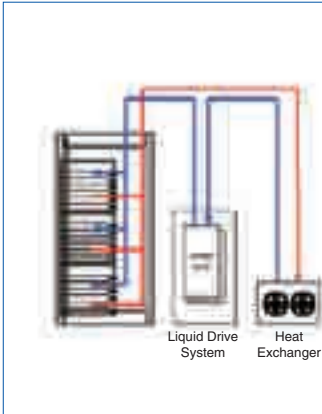


Cooling System

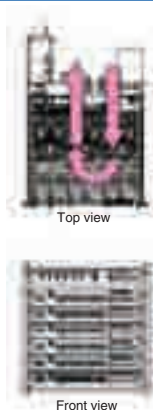
Liquid-cooling system

- Consists of Liquid Drive System (LDS) and Heat Exchanger
- Downsized LDS rack by closed-circuit
- Prevention of coolant degradation and reduction of exchange cost by closed-circuit
- Pump replacement available during operation by using dual cooling pump

Cooling system Block diagram



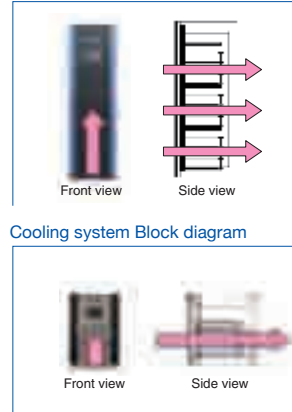
Water Flow in the Sub-chassis



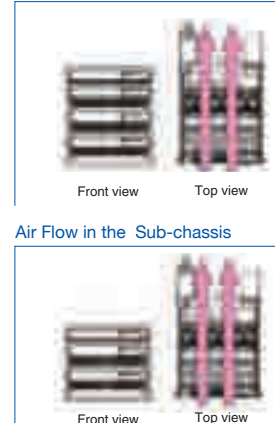
Air-cooling system

- Cooled by internal fan mounted in PA plate
- Intake air from front of the rack and exhaust air from back
- Easy replacement of internal fan

Cooling system Block diagram



Air Flow in the Sub-chassis





TOSHIBA CORPORATION

Social Infrastructure Systems Company

Broadcasting Systems Sales & Marketing Department

1-1, Shibaura 1-chome, Minato-ku, Tokyo 105-8001, Japan

tel: +81-3-3457-3244 fax: +81-3-5444-9417

Email: gtx@po.toshiba.co.jp

Attention : The contents herein may be changed without preliminary announcement.

Copyright©2012 Toshiba Corporation.



This pamphlet uses "FSC® Certified Paper" containing material from responsibly managed forests and 100% of the plant oils in the "plant-based ink" do not contain volatile organic solvents. The printing process did not produce an alkaline developing solution waste product as a "waterless printing method" was used. This method does not require dampening water, containing isopropyl alcohol, etc.

BN0001
2012-6(1)